

# **Staphylococcal Food Poisoning Outbreak in Southeast Kansas December, 2005**



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## **Staphylococcal Food Poisoning Outbreak in Southeast Kansas — December 2005**

### **Final Report Date**

May 19, 2006

### **Introduction**

On December 13, 2005, an emergency department physician at a southeast Kansas hospital notified the Kansas Department of Health and Environment (KDHE) and the local health department (LHD) of a potential foodborne illness outbreak. Approximately 30 employees from a Kansas company (Company X) had presented with severe vomiting and diarrhea at the emergency department. Preliminary information revealed that the ill employees had eaten a catered meal served at Company X on the evening of December 12.

With the cooperation of Company X, KDHE and the LHD initiated an outbreak investigation on December 13. The purpose of the investigation was to characterize the outbreak, to identify the source of illness, and to recommend and implement appropriate prevention and control measures.

### **Background**

Company X had offered a catered meal to employees who worked during one of three different shifts.

- Shift 1: Approximately 100 employees were served a meal on Sunday, December 11 between 12:00 p.m. and 1:00 p.m.
- Shift 2: Approximately 600 employees were served a meal on Monday, December 12 between 12:00 p.m. and 1:00 p.m.
- Shift 3: Approximately 400 employees were served a meal on Monday, December 12 between 9:30 p.m. and 10:30 p.m.

Caterer A, who is licensed in Oklahoma, prepared and delivered all the meals. The meals consisted of sliced beef brisket, smoked sausage, barbecue beans, potato salad, bread, peach cobbler, iced tea, soda drinks, and condiments (barbecue sauce and pre-packaged lemon juice). The same meal was served during all three shifts; however, only Shift 3 employees reported subsequent illness.

## **Methods**

### *Epidemiologic Investigation*

KDHE and the LHD conducted a retrospective cohort study among Shift 3 employees who ate the evening meal served on December 12. Food and illness histories were collected using a self-administered questionnaire distributed on site and by mail.

A case for this outbreak was defined as any Shift 3 employee who experienced diarrhea or vomiting within 24 hours after eating the catered meal. Diarrhea was defined as three or more loose stools in a 24-hour period.

Completed questionnaires were entered into Microsoft Office Access and analyzed using Stata 8. Aggregate descriptive analyses were performed and risk ratios (RR) were calculated to assess the association between consumption of individual food items and subsequent illness.

Because employees of the company were residents of Kansas, Oklahoma, and Missouri, the Oklahoma State Department of Health and Missouri Department of Health and Senior Services were notified. In addition, other public health partners, including the United States Department of Agriculture Food Safety and Inspection Service (FSIS) and the Centers for Disease Control and Prevention (CDC), were informed of the incident to determine if other similar large-scale foodborne outbreaks had been reported nationally.

### *Environmental Assessment*

The Oklahoma State Department of Health (OSDH) conducted an environmental assessment to identify risk factors that may have contributed to illness. OSDH interviewed Caterer A about purchase, storage, preparation, and transportation of the food served. Leftover samples of smoked sausage, peach cobbler, potato salad, and beef brisket were also collected from the catering facility for testing.

### *Laboratory Analysis*

Stool specimens were collected from six ill persons seen at an emergency department. A portion of each fresh stool sample was cultured for bacteria at the local hospital. Remaining stool was preserved in polyvinyl alcohol (PVA) and tested for ova and parasites at a commercial laboratory. The Minnesota Public Health Laboratory (MPHL), the reference laboratory for KDHE, conducted additional analyses: pulsed-field gel electrophoresis (PFGE)<sup>\*</sup> using the stool cultures and polymerase chain reaction (PCR)<sup>†</sup> using PVA preserved stool. The four food samples collected from the catering facility were submitted to the Minnesota Department of Agriculture Laboratory (MDAL) for direct toxin testing, non-selective culture, and quantitative culture.

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<sup>\*</sup> Pulsed-field gel electrophoresis (PFGE) is a DNA-based, molecular subtyping method that may be used to distinguish between strains of organisms. During PFGE, bacterial isolates are separated into genetic fragments that form a unique DNA “fingerprint” or pattern that may be compared and analyzed.

<sup>†</sup> Polymerase chain reaction (PCR) is a method used to rapidly amplify specific segments of DNA.

## **Results**

### *Epidemiologic Investigation*

Three hundred sixty-four questionnaires were collected from approximately 400 employees who worked Shift 3. Of these, 306 (84%) employees reported eating the catered meal served between 9:30 p.m. and 10:30 p.m. Among the employees who ate this meal, 138 (45%) met the outbreak case definition. (Sixty-two individuals who reportedly did not consume the catered meal were excluded from analyses.)

Gender distribution was similar for cases and non-cases, with a higher percentage of males than females in both groups. The median age for the cases was 29.5 years while the median age for non-cases was 37 years. The age range for the study population was 18-69 years (Table 1).

**TABLE 1. Characteristics of study population (n=306)**

	<b>Cases (n=138)</b>	<b>Non-cases (n=168)</b>	<b>Total (n=306)</b>
Sex	No. (%)	No. (%)	No. (%)
Male	77 (56)	96 (57)	173 (57)
Female	61 (44)	72 (43)	133 (43)
Age, yrs			
Median	29.5	37	33
Range	18-68	18-69	18-69

Among the 138 cases, nausea was the most reported symptom, followed by stomachache, diarrhea, and vomiting. More than one-fourth of the cases reportedly sought medical care and less than one percent reported hospitalization. A majority of the cases reported recovery from illness within 48 hours (Table 2).

**TABLE 2. Features of illness reported by cases (n=138)**

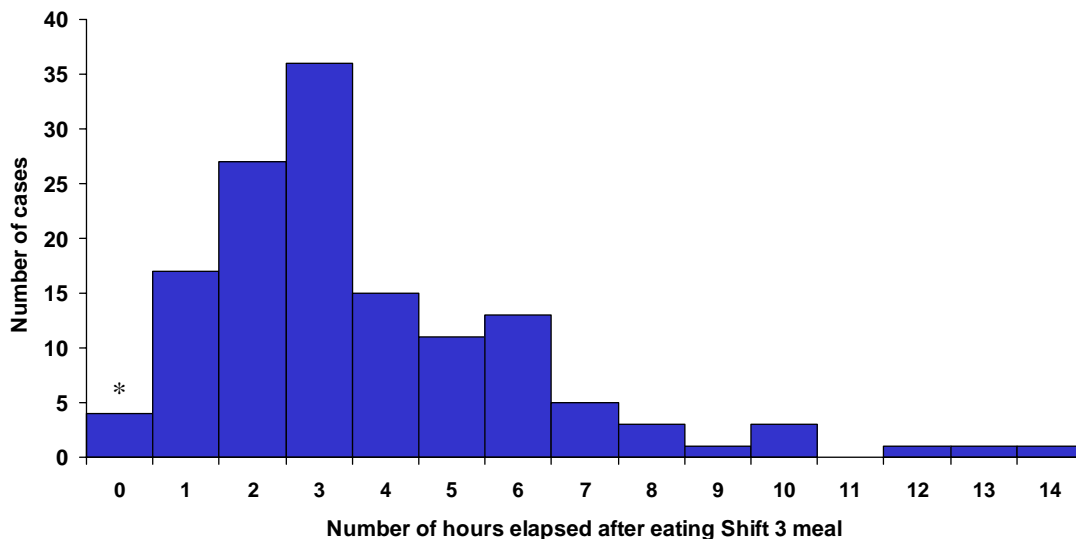
<b>Symptom / Outcome</b>	<b>No. (%)</b>
Nausea	126 (91)
Stomachache	124 (90)
Diarrhea*	120 (87)
Vomiting	111 (80)
Sought medical care	37 (27)
Hospitalized	19 (<1)
Recovered within 48 hours	114 (83)

\* Diarrhea was defined as three or more loose stools in a 24-hour period.

Figure 1 shows that cases had onsets of illness between 0 to 14 hours after the Shift 3 meal was eaten. Almost two-thirds of the cases experienced illness within three hours of food consumption, as seen by the highest peak. The sharp increase and slow decline in illness during a short period of time demonstrate a common-source outbreak.

**FIGURE 1. Epidemic Curve**

**Illness Onset of Cases (n=138)  
December 12-13, 2005**



\* Meal served on Dec 12 between 9:30 p.m. and 10:30 p.m.

Among the foods analyzed, the highest risk of illness was associated with consumption of the smoked sausage, and this association was statistically significant (risk ratio = 3.24; 95% confidence interval=1.3–8.1). Risk of illness from eating the other food items served was minimal and not statistically significant (Table 3).

**TABLE 3. Risk of illness by food item served on the evening of December 12, 2005**

Food Item	Ate Food Item			Did Not Eat Food Item			RR*	95% C.I. †
	Ill	Not Ill	(% Ill)	Ill	Not Ill	(% Ill)		
<b>Smoked sausage</b>	<b>131</b>	<b>142</b>	<b>(48)</b>	<b>4</b>	<b>23</b>	<b>(15)</b>	<b>3.2</b>	<b>1.3–8.1</b>
Peach cobbler	109	120	(48)	26	44	(37)	1.3	0.9–1.8
Barbecue beans	120	141	(46)	14	22	(39)	1.2	0.8–1.8
Barbecue sauce	94	98	(49)	39	55	(41)	1.2	0.9–1.6
Potato salad	117	141	(45)	17	27	(39)	1.2	0.8–1.7
Soda	20	21	(49)	80	112	(42)	1.2	0.8–1.7
Ice	77	92	(46)	45	54	(45)	1.0	0.8–1.3
Bread	113	141	(44)	20	23	(47)	0.9	0.7–1.4
Lemon juice	10	15	(40)	96	124	(44)	0.9	0.6–1.5
Beef brisket	130	162	(45)	7	6	(54)	0.8	0.5–1.4

\* The risk ratio (RR) was calculated by dividing the percent ill who ate the food item by the percent ill who did not eat the food item.

† The confidence interval is an estimated range of values within which the true RR is likely to fall 95% of the time.

#### *Environmental Assessment*

The catering facility was located in Oklahoma, approximately two hours away from Company X. Caterer A solely purchased and prepared the food items at the Oklahoma facility and transported the catered meals to Company X using catering hot holding units.

All the food items, including 425 pounds of smoked sausage, were purchased precooked from two commercial retailers. In preparation for serving, the precooked, frozen sausage was thawed in a refrigerator over a two-day period. Once thawed, the sausage was removed from the casings, sliced into smaller pieces, placed back into the casings, and refrigerated.

Before each of the three meals, the Caterer A cooked portions of the sausage pieces in 2” shallow baking pans at 350°F for approximately one hour. The remaining sausage pieces were kept in the refrigerator until needed for cooking. The 2” shallow pans of sausage and the other food items were then placed into the catering hot holding units for transport to Company X.

Three food handlers from the catering facility helped with preparation at Company X. The 2" pans of sausage were removed from the catering hot holding units, transferred into three 4" chafing pans, and kept hot with chafing fuel. More sausage was added to the chafing pans as needed throughout the meal.

Opened, leftover pans of sausage were discarded after each of the three Shift meals. However, two unused pans from the December 12 noon meal were left in the hot holding units, transported back to the catering facility in Oklahoma, refrigerated, and reheated for the December 12 evening meal. The two leftover pans of sausage from the noon meal and two additional pans of sausage were transported to Company X for the Shift 3 meal.

Unused pans of sausage from the lunch meal were estimated to have been kept in the hot holding units for approximately nine hours on December 12. No temperatures were monitored during the hot holding, cool-down, or reheating process of the sausage for any of the meals. Additionally, examination of the caterer's hands one day after the outbreak did not reveal obvious wounds.

#### *Laboratory Analysis*

Staphylococcal enterotoxin A (SEA)-producing *Staphylococcus aureus* were isolated from all six stool specimens. The six isolates also formed indistinguishable patterns when PFGE was conducted (Figure 3). Using PCR, the SEA-gene sequence was detected in four of six PVA preserved stool samples.

**FIGURE 3. PFGE image of *S. aureus* isolates**

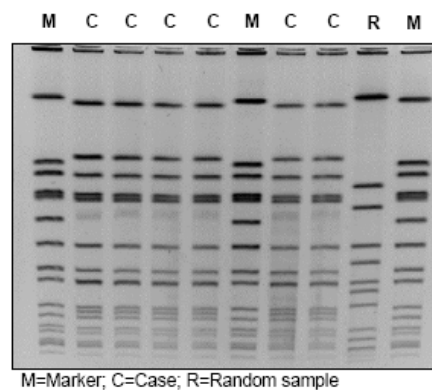


Photo provided by D. Boxrud

Direct toxin testing of the sausage, peach cobbler, potato salad, and beef brisket food samples was negative for SEA. No *S. aureus* was found by semi-qualitative, non-selective, or quantitative cultures. However, *Bacillus licheniformis* was isolated from a sample of sausage.

## Discussion

Staphylococcal food poisoning, which is caused by enterotoxin-producing *S. aureus*, is one of the most common foodborne intoxications. An estimated 185,000 cases are reported annually in the United States, though the actual number of cases may be 38 times higher<sup>1</sup>. Characterized by abrupt onset of vomiting and diarrhea, illness usually appears within two to four hours after ingestion of enterotoxin-contaminated food and may last for one or two days. Long-term complications and death are rare; however, severe dehydration and hospitalization may occur in very young children or older individuals<sup>2</sup>.

*S. aureus* is ubiquitous in the environment and may be found on the skin, in the nose, mouth, and throat of many healthy persons. Foods may become contaminated with *S. aureus* when someone handles food with bare hands or when foods come into contact with equipment that has not been adequately cleaned. In order for staphylococcal food poisoning to occur, the following criteria must be present: (1) a food must be contaminated with enterotoxin-producing *S. aureus*; (2) the food must have the necessary requirements for bacterial growth; (3) adequate time and temperature must be present for the bacteria to multiply and produce enterotoxin; and (4) a sufficient amount of enterotoxin must be consumed<sup>3</sup>. Staphylococci thrive in protein-rich foods with high-salt content, such as ham, and grow in the temperature range of 45°F and 118°F. Heat-resistant enterotoxins are produced between the temperature range of 68°F and 99°F<sup>4</sup>.

The results of the outbreak investigation confirm that Company X employees became ill with staphylococcal enterotoxin A (SEA) after consuming the catered meal served on the evening of December 12, 2005. Of the foods served, the smoked sausage was statistically implicated as the vehicle for disease transmission. Persons who consumed the sausage were three times more likely to become ill compared to those who did not eat the smoked sausage (RR=3.24; 95% C.I.=1.3–8.1).

The sausage sample tested negative for SEA and *S. aureus*. This may be a result of sampling error; the bacteria and enterotoxin may not have been uniformly distributed in the food. In addition, the samples may have been taken from pans of sausage that had not been subjected to prolonged storage. However, *B. licheniformis*, another toxin-producing bacterium that can cause food poisoning, was isolated from a sausage sample. Unlike *S. aureus* intoxication, *B. licheniformis* illness occurs approximately eight hours after consumption of contaminated food and is characterized predominantly by diarrhea<sup>5,6</sup>. The characteristics of the Company X outbreak were more consistent with staphylococcal food poisoning as compared with *B. licheniformis* gastrointestinal illness. The positive laboratory results (isolation of SEA-producing *S. aureus* and detection of the SEA-gene sequence) from the human samples provided additional evidence for this conclusion.

Contamination of the sausage may have occurred during any stage of food processing, from slaughtering, sausage production, to serving. Despite public health partners being alerted of the outbreak, no other large-scale staphylococcal food poisoning outbreaks were reported nationally during the same time period.



Environmental factors that may have contributed to bacterial growth and enterotoxin production in the sausage include substantial food handling during preparation, lack of temperature monitoring during food preparation and transportation, and prolonged storage of food in the catering hot holding units. The hot holding units used by the caterer did not have any heating elements. Even when the units were not opened, temperature for the stored food likely decreased over time.

To prevent the growth of *S. aureus* and the production of enterotoxins, meats should be heated to an internal temperature of 165°F to 170°F to sufficiently inactivate enterotoxin-producing *S. aureus* that may be present, and appropriate holding temperatures should be maintained<sup>7</sup>. Proper food handling should also be implemented, including good hand washing before handling food and having minimal bare hand contact with food.

### *Strengths*

The communication and collaboration with partners at the local, state, and federal levels promoted a prompt, thorough, and successful outbreak investigation. This outbreak also provided an opportunity to employ PCR using PVA preserved stool to confirm SEA as the causative agent.

### *Areas of Improvement*

Though the laboratory results of the stool samples confirmed the outbreak to be caused by SEA, testing of vomitus could have expedited this confirmation. Better specimen collection guidance for healthcare providers could have also aided the outbreak investigation. Furthermore, testing of the food handler for *S. aureus* carriage, even though no obvious wounds were present, could have provided additional information.

## **Recommendations**

To prevent future outbreaks of enterotoxin-associated food poisoning, food handling practices should be reinforced among caterers, especially the storage and transport of cooked, ready-to-serve foods. Similarly, consumers should be aware of food preparation and food safety practices when hiring caterers. Specimen collection guidelines for healthcare providers should also be developed. These guidelines would assist in the proper collection of appropriate samples needed to identify the causative agent of outbreaks. Lastly, the utility of PCR in detecting enterotoxin genes in stool using control and case samples during foodborne outbreak investigations should be evaluated.

## **Conclusions**

The epidemiologic evidence and laboratory results of the stool samples confirmed this outbreak to be caused by enterotoxin A produced by *Staphylococcus aureus*. The smoked sausage served as a good medium for *S. aureus* growth and enterotoxin production when proper food handling practices were not implemented. Improved food handling guidelines specifically for caterers may help prevent similar outbreaks in the future.

### **Acknowledgements**

Company X staff

Staff at the southeast area hospitals

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Kansas Department of Health and Environment

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Kansas Department of Health and Environment Laboratories – J Sexton, R Flahart

### **Outbreak Investigators**

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Minnesota Department of Agriculture Laboratory – C Braymen

Kansas Department of Health and Environment – A Huang, C Bañez Ocfemia, DC Hunt

### **References**

1. Mead PS, Slutsker L, Dietz V, et al. Food-related illness and death in the United States. *Emerg Infect Dis* 1999;5:607-25.
2. Heymann DL. *Control of Communicable Diseases Manual*. 18<sup>th</sup> ed. Washington, DC: American Public Health Association, 2004.
3. Armstrong GL, Hollingsworth J, Morris, Jr. JG. Bacterial foodborne disease. In: Evans AS, Brachman PS, eds. *Bacterial Infections in Humans: Epidemiology and Control*. 3<sup>rd</sup> ed. New York: Kluwer Academic/Plenum Publishers, 1998:109-138.
4. CDC. Outbreak of staphylococcal food poisoning associated with precooked ham – Florida, 1997. *MMWR* 1997;46:1189-1191.
5. Tuazon CU. Other bacillus species. In: Mandell GL, Bennett JE, Dolin R, eds. *Principles and Practice of Infectious Diseases*. 5<sup>th</sup> ed. Philadelphia: Churchill Livingstone, 2000:2220-2226.
6. Griffiths MW, Schraft H. *Bacillus cereus* food poisoning. In: Cliver DO, Riemann HP, eds. *Foodborne Diseases*. 2<sup>nd</sup> ed. San Diego: Academic Press, 2002:261-270.
7. Wong ACL, Burgdoll MS. Staphylococcal food poisoning. In: Cliver DO, Riemann HP, eds. *Foodborne Diseases*. 2<sup>nd</sup> ed. San Diego: Academic Press, 2002:231-248.

### **Attachments**

1. Outbreak questionnaire
2. Environmental inspection report (names have been omitted for confidentiality purposes)
3. Fact sheet on staphylococcal food poisoning

**ATTACHMENT 1**  
**Outbreak Questionnaire**



**Kansas Department of Health and Environment  
Employee Foodborne Illness Outbreak Survey  
December 14, 2005**

***Information collected from the survey is used strictly for the investigation of the foodborne illness outbreak that occurred on December 12, 2005. Your participation is voluntary, and any information you provide that identifies you will be kept confidential.***

**Please mark answers to the best of your recollection. When you finish, please return this form to one of the health department representatives. Thank you.**

**1. Last Name:** \_\_\_\_\_ **2. First Name:** \_\_\_\_\_

**3. Age:** \_\_\_\_\_ Years **4. Sex:** ☐ Male ☐ Female

**5. Did you eat the catered meal provided on Monday, December 12, 2005?**

☐ Y ☐ N → If no, you have completed the survey. Thank you.

**6. What time did you eat?** ☐ 9:30 pm ☐ 10:00 pm ☐ Other (Specify: \_\_\_\_\_)

**7. Please indicate how many times you went through each of the following buffet lines.**

Left Line: \_\_\_\_\_ Times Center Line: \_\_\_\_\_ Times Right Line: \_\_\_\_\_ Times

**8. Did you eat any of the following items?**

Sliced brisket?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Can't remember
Smoked sausage?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Can't remember
BBQ sauce from dispenser?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Can't remember
Potato salad?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Can't remember
BBQ beans?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Can't remember
Bread?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Can't remember
Peach cobbler?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Can't remember
Iced tea?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Can't remember
Soda?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Can't remember
Ice (including ice in drinks)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Can't remember
Pre-packaged lemon juice?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Can't remember

**9. Please list any other food eaten while at work on December 12, 2005.**

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*Please continue on reverse side.....*

***Thank you for completing the survey. Happy holidays!***

# **ATTACHMENT 2**

## **Environmental Inspection Report**

**(Names have been omitted for confidentiality purposes)**

Catered Event / Suspected Outbreak – Dec. 11 and 12, 2005

An investigation was performed on December 13, 2005 at [REDACTED] located on [REDACTED] Drive on the northwest side of [REDACTED]. The investigation was in regard to a suspected food-borne illness outbreak that allegedly occurred from a catered event on December 11<sup>th</sup> and 12<sup>th</sup> at the [REDACTED] facilities in [REDACTED] K.S. This investigation included an inspection and an interview done by W. Kent Smith, health inspector from the Washington County Health Department, Bartlesville, OK with the owner and operator of the restaurant, [REDACTED].

The catered meal consisted of brisket, sausage, potato salad, bar-b-que beans, peach cobbler, and iced tea. There were three separate catered occasions in two days at the [REDACTED] facilities. The first one was on Sunday, Dec. 11, and the meal was served to two groups – one at 12 noon and the other at 12:30 pm. A total of 100 people were served. The second event took place on Monday, Dec. 12 and food was served at 12 noon and 12:30 pm. During this serving period approximately 500 to 600 people were served. The last event was later that Sunday night and the food was served at 9:30 and then at 10 pm and 400 people were served.

The employees of [REDACTED] that served this Christmas meal consisted of four people. The owner, [REDACTED] is the sole person who prepared and delivered all of the food to the events. The food was prepared at his restaurant near [REDACTED]. The other three food handlers only helped with the preparations at the event site. Their names are [REDACTED] and a girl named [REDACTED] whose last name was not remembered at the time of the investigation. The individuals who served the foods in the catering line were managers of [REDACTED].

When asked about the overall health of his employees [REDACTED] said that none of them had any obvious symptoms of illness or infection at the time of the events. [REDACTED] appeared healthy at time of investigation, and had no obvious symptoms, cuts or infections on hands, etc.

Also when asked [REDACTED] said that no employees took any of the foods home with them and none of the [REDACTED] Employees brought additional foods to be served at the event.

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The following food items were purchased for the event at [REDACTED] in [REDACTED] on December 10, 2005:

- 1) [REDACTED] pre-cooked beef brisket, fresh, 425 lbs.
- 2) [REDACTED] brand beans, 60 large cans

[REDACTED] in [REDACTED] delivered the following food items to the restaurant on December 6, 2005:

- 1) [REDACTED] Smoked Sausage, frozen, 425 lbs.
- 2) [REDACTED] Potato salad, 330 lbs.
- 3) [REDACTED] Peach Cobbler, 18 cases
- 4) [REDACTED] Bar-B-Que Sauce, 12 gallons

The following notes regarding the preparation of the foods were received during the interview with [REDACTED]

The pre-cooked brisket was taken out of the refrigerator, the fat was trimmed off, the meat was placed into 2" deep baking pans and [REDACTED] chicken broth was added. This prep time took about 15 minutes per brisket. The pans were then covered with aluminum foil and placed into refrigeration until it was time for cooking. At cooking time, the pans were placed into the convection ovens at 350°F for 45 minutes to one hour. Once cooked, they were then taken out of the ovens, the foil was removed, plastic wrap was used to cover the cooked brisket and fresh foil was then placed over that. The pans were then placed into the [REDACTED] catering hot holding units until it was time to deliver foods to the event. The maximum length of time that the hot briskets remained in [hot holding units] prior to serving was approximately 6 hours. Cooking and hot holding temperatures were not taken during the preparation of the event, except for the Monday afternoon event where [REDACTED] said that the foods were all above 140°F prior to serving. At serving time two 2" pans of brisket were emptied into a 4" chaffing pan that was covered and placed over sterno to keep the meat hot. All dirty food containers, utensils, etc. were brought back to the restaurant where they were washed and sanitized in the three-compartment sink. Chlorine solution of 100 ppm was used for sanitizing. The containers of foods that were opened and that foods were served from were not re-used. This food was discarded after the serving period. However, two unopened pans of brisket (and two unopened pans of sausage) from the Monday afternoon event was left in the [hot holding units], was brought back to the restaurant, refrigerated, and later

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reheated for the Monday night event. A conservative estimate on how long these pans of meat were left in [hot holding units] was approximately 9 hours. Again, temperatures of these leftovers were not monitored, neither hot hold, cool-down nor reheat.

The pre-cooked frozen sausage was thawed in refrigeration and this process took two days. Once thawed, the sausage was removed from the bag in the case and sliced into smaller pieces - approximately 1/4 " in diameter. This meat was then put back into the original bag and case and placed back into the refrigerator. This prep time was about 10 to 15 minutes per case. When it was time to cook the sausage it was placed into 2" deep baking pans and [redacted] chicken broth was poured over the meats. The pans were covered with foil and placed into the convection ovens at 350°F for 45 minutes to 1 hour. Cooking temperatures were not monitored. The foil was removed and new plastic wrap and foil was used to cover the hot meats. The hot meat was then placed directly into [hot holding units] where it stayed for about 6 hours before serving time. As with the brisket, two 2" pans of sausage were emptied into a 4" chaffing pan that was covered and placed over sterno. As already mentioned, two 2" pans of sausage were left over from the Monday afternoon event. This meat was brought back to the restaurant, refrigerated and reheated for the 9:30 pm event. The cook did not properly monitor the hot hold, cool-down and reheat temperatures.

The canned beans were drained, placed into 2" baking pans and bar-b-que sauce was added. The mixture was stirred, covered with foil and then placed into the convection oven and cooked at 350°F for 45 minutes to 1 hour. Because of the large volume of food being prepared, [redacted] also cooked some of the beans on the stove, poured the hot food into 2" baking pans, covered the pans with foil, and placed them into the cambro units. He did say that he checked the temperatures of the beans during the cooking process because they have to be stirred. His temperatures ranged from 160° to 180°F. As with the meats, the 2" pans of beans were emptied into 4" chaffing pans, covered and placed over sterno prior to serving. There were no leftover beans from any of the three serving periods.

The commercially prepared potato salad was kept in refrigeration until all of the hot foods were in the [hot holding units] and ready for transporting. The potato salad was placed into [redacted] coolers without ice, but [redacted] did

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say that he checked temperatures for the Monday afternoon event and the temperature of the potato salad was below 40°F. He also said that the potato salad was in the cooler for no longer than 1-½ hours before the initial serving time. The potato salad was removed from the containers and placed into the chaffing pan without ice. No opened product was saved as a leftover. At the end of the serving period Monday afternoon there was some unopened leftover potato salad, which had been left in the cooler. It was covered with ice and served at the Monday pm event.

The cobbler is an uncooked, frozen product that was placed into the convection oven at 350°F and was cooked for over an hour. The cobbler was then placed uncovered on a shelf in the kitchen, cooled down to room temperature, covered and then placed back into the original box for transporting to the site. The product was then served into individual disposable bowls and placed at the end of the serving line. It was not refrigerated or kept cold at any time after cooking.

The tea was made from large [REDACTED] tea bags that were boiled in a pot on the stove. The warm tea concentrate was poured over ice in a large [REDACTED] drink cooler. Water was then added until the drink cooler is full. The cooler was covered with a lid and transported. The tea was made fresh the mornings of the two afternoon events and the afternoon of the night event.

The Department of Environmental Quality does monitor the restaurant's well by submitting annual water samples. The last samples were taken on May 19, 2005 and the results showed that there were no coliform bacteria found. The water sample report also indicated that the water samples met the Safe Drinking Water Act standards.

The restaurant owner's original intent was to throw away all of the leftover foods from the last catered event on Monday night. He stayed overnight in a [REDACTED] motel, the leftover foods were left in the trailer and food temperatures were not maintained. Although these leftovers were to be thrown out and were found at 52°F, they were embargoed in case any samples of the foods need to be taken.

The facility at the time of the investigation appeared to be in satisfactory condition. Although there were some non-critical violations, the

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facility and it's equipment all appeared to be in good working order. Refrigerated foods were found to be at 36° to 37°F. The hand sinks were properly stocked and ready for use. Chlorine sanitizer was available for use. Overall the facility and the equipment were clean and well maintained.

The foods that appear to be most in question are the leftovers brisket and sausage. These meats' hot holding, cool-down and reheat temperatures were not monitored and temperature abuse could have taken place prior to serving the Monday night group. Another food that was not handled properly was the potato salad. There could have been some temperature abuse in the portion that was also leftover for the Monday night's event, as it was not iced down before leaving the restaurant. The peach cobbler might at first appear to be an issue as it was left out at room temperature for a lengthy time. The sugar content, however, probably keeps it from being a potentially hazardous food.

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Consumer Protection Division Page 1 of 6  
FOOD INSPECTION REPORT

Reg. #	Mo.	Day	Yr.	Insp. Time	Mgr. Cert.	County #	Establishment #	Date of Exp.	Type Class	Priority		
4488	12	13	05	11 AM		57			45	11		
Purpose of Inspection: 1-Routine 2-Compliance 3-Issue License Application 4-Complaint 5-Other 6-Out of Business 7-Follow-Up Activity												
Establishment:							Owner:					
City:							Phone: ( )					
OAC 310:258	✓	I. Food (PHF) Temperature/Time Requirements Violations Require Immediate Corrective Action (CDI)=corrected during inspection								Remarks	Correct by Date	
5-55		*1. Proper Cooling for Cooked/Prepared Food (140° - 70°F in 2 hrs./ 70° - 41°F in 4 hrs.)										
5-57(2), 60		*2. Cold Hold (41°F)/Time Control										
5-57(1), 60		*3. Hot Hold (140° F)/Time Control										
5-45		*4. Proper Cooking Temperatures per PHF										
5-51		*5. Rapid Reheating (165° F in 2 hrs)										
Food	Temp	Process	Location	Time	Food	Temp	Process	Location	Time			
Breket	36°F	CH	Refrig.									
Ham	36°F											
II. Personnel/ Handling/Source Requirements - Requires Immediate Corrective Action										Remarks	Date	
3-5		*6. Personnel with Infections Restricted/Excluded										
3-9,10:5-20		*7. Proper Handwashing / Proper Handling of Ready-To-Eat										
3-18		8. Good Hygienic Practices (Eating/Drinking/Smoking/Other)										
5-1, 2		*9. Approved Source/Source Condition										
5-22,28,40,44		10. Food Protected during Storage, Display, Transportation, Service										
5-22		*11. Cross-Contamination of Raw/Cooked Foods/Other										
3-1, 2, 3, 4		12. Demonstration of Knowledge / Person in Charge										
9-8,9		13. Hot and Cold Water Under Pressure / Sufficient Capacity										
III. Facility and Equipment Requirements - Requires Corrective Action Within 90 Days										Remarks	Date	
7-50, 7-56		14. Equipment Adequate to Maintain Product Temperature/Accurate Thermometers Provided										
3-19,26:11-24,25		15. Handwash Facilities Adequate/Accessible with Soap and Towels										
11-15,48,53		16. Evidence of Rodent/Insect Contamination/Other Animals/Outer Openings Protected										
13-19		17. Toxic Items Properly Used/Stored/Labeled										
7-72,73,75		18. Manual/Mechanical Warewashing and Sanitizing at ( ) ppm/temperature <u>chlorine</u>										
3-1, 16,22,52,30		19. Approved Water Supply/Sewage Disposal Systems/Cross-Connections										
7-22,63		20. Food Contact Surfaces of Equipment and Utensils Cleaned/Sanitized/Good Repair										
15-58, 67		21. Date Marking; Consumer Advisory										
Next Page(s)												
42 Floors dirty under equipment												
39 Restroom fixtures are dirty												
38 Drip pan at stove is dirty												
36 Storage cabinets are dirty												
Food embargoed - <del>left</del> in trailer - was to be thrown out - will save for cpl if sampling desired - approx 52°F												
Based on an inspection this day, the items documented above identify the violations in operations or facilities, which must be corrected. Items 1-13 must be corrected immediately, items 14-21 must be corrected within 90 days, and all additional items must be corrected within 90 days or as noted. Failure to comply with any time limits for corrections specified in this notice may result in cessation of your Retail Food Establishment operation.												
Inspector's Signature										Title		
RPS												

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ODH #541  
(REV. 08/04)

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INSPECTION REPORT

Establishment					License No.					Date				
[REDACTED]					[REDACTED]					12-13-05				
Address					City					Time				
[REDACTED]					[REDACTED]					11 AM				
Food	Temp	Process	Location	Time	Food	Temp	Process	Location	Time	Food	Temp	Process	Location	Time

Violation Item Number	Based on an inspection this day, the items documented below identify the violations in operations or facilities, which must be corrected. As indicated on the inspection form, items 1-13 must be corrected immediately. Items 14-21 must be corrected within 10 days. All additional items must be corrected within 90 days or such shorter time as specified by the regulatory authority. Failure to comply with any time limits for corrections specified in this notice may result in cessation of your Retail Food Establishment operation.	Correct By Date/Time
	Employees consist of owner who prepares and delivers food to catering site and 3 other helpers that work only at catering sites that help set up. During this event the [REDACTED] managers helped serve foods. Names of employees owner [REDACTED] and helpers [REDACTED]	
	Events totalled 3 - 1st Sunday, 12/11 @ 12 Noon + 12:30 PM - total 100 people 2nd Monday, 12/12 @ 12 Noon + 12:30 PM - total 500 served 3rd Monday, 12/12 @ 9:30 + 10 PM - total 400 served Food items served: Pre-cooked [REDACTED] sliced beef brisket - brought 12/10, 425 lbs; bought at [REDACTED] date 1/19/04 Smoked sausage, green beans - 330 lbs (11 cases) Potato salad - (18 cases) Peach Cobbler - 12 yellow cases [REDACTED] BBQ Sauce - 60 cans [REDACTED] brand beans -	
	No employees took food home	
	No additional items from [REDACTED] employees were served	
Comments:	[REDACTED] did not cater any other events in last week	
Inspected by Registrar/Sanitarian No.	Received by	Title
[REDACTED] 11/28	[REDACTED]	[REDACTED]

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INSPECTION REPORT

Establishment [REDACTED]	License No. [REDACTED]	Date 12-13-05							
Address [REDACTED]	City [REDACTED]	Time [REDACTED]							
Food	Temp	Process	Location	Time	Food	Temp	Process	Location	Time

Violation Item Number: Based on an inspection this day, the items documented below identify the violations in operations or facilities, which must be corrected. As indicated on the inspection form, items 1-13 must be corrected immediately. Items 14-21 must be corrected within 10 days. All additional items must be corrected within 90 days or such shorter time as specified by the regulatory authority. Failure to comply with any time limits for corrections specified in this notice may result in cessation of your Retail Food Establishment operation.

Brisket - pre cooked put into refrigerator  
- has to be delivered from [REDACTED]

briskets taken out of case and stored in [REDACTED] (Hot holding unit)  
for delivery

5 mins - brisket taken out of package chicken broth added  
+ the briskets put into pan. Covered w/ foil

- placed back into refrigeration until time for cooking

- place into convection oven at 350°F 45 mins

- temperature to be obtained 160 to 180°F, but to 1h  
temps not checked.

- removed from convec. oven, foil removed,  
covered w/ saran wrap + new foil

max 35 mins per pan + then placed into [REDACTED] (Hot holding unit)

6 hrs time in - in approximately 6 hrs food is placed site  
into chaffing unit heated by sterno

35 mins per deep pan + covered in larger food pans (4x pan)

- once line of customers formed lids are removed  
+ food is served.

- temperatures were checked Sunday Noon  
+ hot foods were in mid to high 140's.

- temps were not checked at 9:30 PM serving.

- some leftovers from Sunday noon serving were  
brought back to restaurant.

9 hrs kept [REDACTED] refrigerated + the reheated for 2:30 PM serving.

Inspected by: [REDACTED] Title: [REDACTED]

Comments: - no reheat temperatures taken  
- new foods heated up for each serving event.  
- leftovers from Sun PM to be discarded  
12/14/2005 WED 13:12 [TX/RX NO 9692] 009



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INSPECTION REPORT

Establishment [REDACTED]	License No. [REDACTED]	Date 12-13-06
Address [REDACTED]	City [REDACTED]	Time [REDACTED]

Food	Temp	Process	Location	Time	Food	Temp	Process	Location	Time

Violation Item Number: Based on an inspection this day, the items documented below identify the violations in operations or facilities, which must be corrected. As indicated on the inspection form, items 1-13 must be corrected immediately. Items 14-21 must be corrected within 10 days. All additional items must be corrected within 90 days or such shorter time as specified by the regulatory authority. Failure to comply with any time limits for corrections specified in this notice may result in cessation of your Retail Food Establishment operation.

Sausage - pre-cooked delivered by [REDACTED]  
- put directly into freezer  
- thawed in refrigerator - takes 2 days  
10-15 minutes - cut into small pieces put back into bag in bag & back into refrigerator  
- put into 2" shallow pans w/ [REDACTED] chicken broth (can)  
foil on top & then into convection oven  
- cooked 350°F for 45 mins to 1 hr.  
- then placed into can bro - 6 hrs before  
- delivered to site, placed into chaffin served  
pans w/ sterno.  
- foods on the line were not kept as leftovers - only unopened pans of meats were kept, refrigerated & then reheated for serving later Sunday night.

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- approx 2 shallow 2" pans of unopened meats, both brisket & sausage, were used later that night.

Comments:

Inspected By Registered Sanitarian No. <u>1458</u> <u>[Signature]</u>	Received by <u>[REDACTED]</u>	Title <u>Labr</u>
--	-------------------------------	----------------------

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(REV. 08/01)

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INSPECTION REPORT

Establishment [Redacted]	License No. [Redacted]	Date 12-13-05							
Address [Redacted]	City [Redacted]	Time [Redacted]							
Food	Temp	Process	Location	Time	Food	Temp	Process	Location	Time

Violation Item Number	Based on an inspection this day, the items documented below identify the violations in operations or facilities, which must be corrected. As indicated on the inspection form, items 1-13 must be corrected immediately. Items 14-21 must be corrected within 10 days. All additional items must be corrected within 90 days or such shorter time as specified by the regulatory authority. Failure to comply with any time limits for corrections specified in this notice may result in cessation of your Retail Food Establishment operation.	Correct By Date/ (Time)
	Beans - canned, liquid poured off + BBA sauce added - foil to cover pan (2" shallow) and placed into convection oven - to 160-180°F - cooked at 350°F - 45 mins/hr. - temps checked & product stirred in mid-cycle temp out at 160-180°F (Hot holding unit) - placed into chaffin pans w/ steam - placed into refrigeration until leaving for event	
	Potato salad - refrigerated - transported into cooler - no ice for transport or serving - transferred from lg bag to deep pan at catering event site - served w/in 30 min - temperature checked Sun AM - less than 40°F	

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Owner at time of investigation, had no apparent symptoms of illness or infection - she stated same for helpers

Comments:

Inspected by Registered Sanitarian No. 1468

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ODH #542  
(REV. 08/01)



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## INSPECTION REPORT

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Violation Item Number	Based on an inspection this day, the items documented below identify the violations in operations or facilities, which must be corrected. As indicated on the inspection form, items 1-13 must be corrected immediately. Items 14-21 must be corrected within 10 days. All additional items must be corrected within 90 days or such shorter time as specified by the regulatory authority. Failure to comply with any time limits for corrections specified in this notice may result in cessation of your Retail Food Establishment operation.	Correct By Date/ (Time)
	Cobbler - frozen - put into convection 350°F - 1 hr put onto shelf, cooled down, placed back into box, transported to catering site - opened, served into individual bowls + customers take product at end of line	
	Tea - large [redacted] bags boiled - concentrate - poured cooled concentrated tea onto ice in [redacted] drink cooler, water added	
	<u>DED</u> checks well - taking samples annually - last one taken 5/19/05 - no coliform present - sample met Safe Drinking Water act standard	
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Comments:

Inspected by Registered Sanitarian No. 1268

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(REV. 08/01)

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Protective Health Services  
Consumer Protection Division  
1000 NE 10th Street  
Oklahoma City, OK 73117-1299  
Telephone: (405) 271-6868  
FAX: (405) 271-3442

**NOTICE OF EMBARGO OF FOOD, DRUGS, DEVICES,  
COSMETICS, AND HAZARDOUS SUBSTANCES**

TO:



Sample No. \_\_\_\_\_  
Date: 12/13/05  
1:30 PM

In accordance with the provisions of the Oklahoma Public Health Code 1963 Sections 1105, 1405, 1605 you are hereby notified that the following described merchandise now in your possession or custody is suspected of being adulterated or misbranded and is hereby detained or embargoed.

Hold Tag No.	Description
# 2 12/13/05	Brisket - [redacted] - 6 lbs. each / 12 in a case
# 1 12/13/05	Sausage - [redacted] - 10 lbs each
# 3 12/13/05	Potato Salad - [redacted]
# 4 12/13/05	Cobbler - [redacted] - 30 lbs each

Location of embargoed merchandise: [redacted]

The removal of this merchandise without permission of the Agent or a court of proper jurisdiction is unlawful, and all persons having any interest or right in the embargoed merchandise should be so warned.

By:

[Signature]  
Agent of the Commissioner

James M. Crutcher, M.D., J.D.  
Commissioner of Health and  
State Health Officer

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ODH Form 552  
(Rev. 01/04)

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**ATTACHMENT 3**  
**Fact Sheet on Staphylococcal Food Poisoning**



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## Division of Bacterial and Mycotic Diseases

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# Staphylococcal Food Poisoning

[Disease Listing](#) | [General Information](#) | [Technical Information](#) | [Additional Information](#)

## Frequently Asked Questions

- [What is \*Staphylococcus\*?](#)
- [What is staphylococcal food poisoning?](#)
- [What are the symptoms of staphylococcal food poisoning?](#)
- [How do I know if I have staphylococcal food poisoning?](#)
- [How should a patient with suspected staphylococcal food poisoning be treated?](#)
- [Is a sick patient infectious?](#)
- [How can staphylococcal food poisoning be prevented?](#)
- [Could staphylococcal toxins be used in a bioterrorist attack?](#)

### What is *Staphylococcus*?

*Staphylococcus aureus* is a common bacterium found on the skin and in the noses of up to 25% of healthy people and animals. *Staphylococcus aureus* is important because it has the ability to make seven different toxins that are frequently responsible for food poisoning.

### What is staphylococcal food poisoning?

Staphylococcal food poisoning is a gastrointestinal illness. It is caused by eating foods contaminated with toxins produced by *Staphylococcus aureus*. The most common way for food to be contaminated with *Staphylococcus* is through contact with food workers who carry the bacteria or through contaminated milk and cheeses. *Staphylococcus* is salt tolerant and can grow in salty foods like ham. As the germ multiplies in food, it produces toxins that can cause illness. Staphylococcal toxins are resistant to heat and cannot be destroyed by cooking. Foods at highest risk of contamination with *Staphylococcus aureus* and subsequent toxin production are those that are made by hand and require no cooking. Some examples of foods that have caused staphylococcal food poisoning are sliced meat, puddings, some pastries and sandwiches.

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### **What are the symptoms of staphylococcal food poisoning?**

Staphylococcal toxins are fast acting, sometimes causing illness in as little as 30 minutes. Symptoms usually develop within one to six hours after eating contaminated food. Patients typically experience several of the following: nausea, vomiting, stomach cramps, and diarrhea. The illness is usually mild and most patients recover after one to three days. In a small minority of patients the illness may be more severe.

### **How do I know if I have staphylococcal food poisoning?**

Toxin-producing *Staphylococcus aureus* can be identified in stool or vomit, and toxin can be detected in food items. Diagnosis of staphylococcal food poisoning in an individual is generally based only on the signs and symptoms of the patient. Testing for the toxin-producing bacteria or the toxin is not usually done in individual patients. Testing is usually reserved for outbreaks involving several persons. If you think you may have food poisoning, contact your physician.

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### **How should a patient with suspected staphylococcal food poisoning be treated?**

For most patients, staphylococcal food poisoning will cause a brief illness. The best treatments for these patients are rest, plenty of fluids, and medicines to calm their stomachs. Highly susceptible patients, such as the young and the elderly, are more likely to have severe illness requiring intravenous therapy and care in a hospital.

Antibiotics are not useful in treating this illness. The toxin is not affected by antibiotics.

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### **Is a sick patient infectious?**

Patients with this illness are not contagious. Toxins are not transmitted from one person to another.

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## How can staphylococcal food poisoning be prevented?

It is important to prevent the contamination of food with *Staphylococcus* before the toxin can be produced.

- Wash hands and under fingernails vigorously with soap and water before handling and preparing food.
- Do not prepare food if you have a nose or eye infection.
- Do not prepare or serve food for others if you have wounds or skin infections on your hands or wrists.
- Keep kitchens and food-serving areas clean and sanitized.
- If food is to be stored longer than two hours, keep hot foods hot (over 140°F) and cold foods cold (40°F or under).
- Store cooked food in a wide, shallow container and refrigerate as soon as possible.

## Could staphylococcal toxins be used in a bioterrorist attack?

Staphylococcal toxins could be used as a biological agent either by contamination of food/water or by aerosolization and inhalation. Breathing in low doses of staphylococcal enterotoxin B may cause fever, cough, difficulty breathing, headache, and some vomiting and nausea. High doses of the toxin have a much more serious effect

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Date: March 29, 2006

Content source: National Center for Infectious Diseases/Division of Bacterial and Mycotic Diseases

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